LATE RESULTS AFTER OPERATIONS FOR BENIGN DISEASES OF THE STOMACH AND DUODENUM.*

BY B. G. A. MOYNIHAN, M.S., F.R.C.S.,

OF LEEDS, ENG.

In endeavoring to arrive at a just estimate of the value of surgery in its application to the non-malignant diseases of the stomach I have gathered together the records of all the cases upon which I had operated up to the end of 1905. They are 281 in number; and may be classified into four groups:

I. Perforating ulcer of the stomach or duodenum;

II. Cases for which hemorrhage has been the immediate cause of urgent interference;

III. Cases of chronic ulcer, etc.;

IV. Cases of hour-glass stomach.

A printed form of detailed enquiry was sent out in the early part of this year to all the medical men who had very kindly referred these patients in the first instance to me. Of the 281 patients recent information is at hand in reference to 265 cases. The work of summary, analysis, and criticism has been very kindly undertaken for me by my colleague, Mr. Harold Collinson.

Group I.—*Perforation of the stomach or duodenum*: During the period mentioned, that is, to the end of 1905, I operated upon 27 cases of perforating ulcer; 18 patients recovered. In 6 cases gastro-enterostomy was performed immediately after the closure of the ulcer because of the narrowing at or near the outlet of the stomach, which this procedure had caused. One of the cases died and 5 recovered. In 2 patients symptoms due to a cicatricial stenosis near the pylorus developed within a few months, and gastro-enterostomy was necessary to afford relief. In one patient I have recently had to operate four years after the closure of a perforating ulcer, which had caused a contraction in the centre of the stomach.

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Gastro-enterostomy was performed to the greatly hypertrophied cardiac pouch of an hour-glass stomach. In 8 cases, therefore, in a total of 18 who recovered, the operation of gastro-enterostomy has been necessary. All these cases are now reported to be quite well. In the remaining 10 cases the ulcer was placed on the lesser curvature, and in the cardiac half of the stomach in 9 instances; in one it was "prepyloric." Eight of the 9 patients are now quite well and make no complaint of stomach symptoms; from one patient nothing has been heard. The patient whose ulcer was prepyloric complains of indigestion and occasional vomiting and will probably need gastro-enterostomy.

The present condition of these patients is interesting in reference to two points: In the first place it is suggestive of the need for gastro-enterostomy in all cases of a perforating ulcer placed at or near the pylorus, in a position where the subsequent contraction in healing is likely to cause stenosis. In the second place it makes it evident that when an ulcer is placed near the lesser curvature and away from the pylorus, its excision or infolding suffices to give complete relief. Gastro-enterostomy in such circumstances is therefore not necessary at the time the perforation is treated nor is it likely to become necessary at a later stage.

GROUP II.—*Acute hemorrhage:* In the series of hemorrhage cases there were 27 patients submitted to operation, of whom 23 recovered and are alive now; reports as to their present state of health have been received from 22. One patient, who was admitted to the hospital from prison, cannot now be traced. Eighteen are reported as being "perfectly well," "cured," "absolutely cured"; in each one a complete restoration to health, good digestion and normal appetite has occurred. One case is improved in health but is rather delicate. His medical man reports, "the operation was for urgent and grave hæmatemesis and undoubtedly saved the patient's life, but he is still as he was before—weak and frail. There are no symptoms of dyspepsia." Three patients have suffered from post-operative vomiting. Two of the cases reported upon in Janu-

ary and March, 1903, had the posterior long-loop operation; in one vomiting of bile occurred infrequently for a year and then disappeared, the patient is now "quite well"; in another it has continued at intervals of 2 or 3 weeks up to the present time; the patient moreover says that she is "far better" than before and "able to work now." In the third case the no-loop operation was performed, the jejunal direction being downwards and to the right. This case is to me the most interesting of all, for it is the only case in which after the no-loop operation any bilious vomiting has occurred. The operation was in February, 1905, upon a patient seen with Dr. Nicholson Dobie and the late Dr. Dreschfeld. Bilious vomiting occurred every week or two up to 3 months ago, when it disappeared after repeated lavage. In this case after the anastomosis was completed it was noticed that the jejunum did not fit well; it seemed to be twisted above the point of union with the stomach; a remark to this effect is made in the notes written by my assistant on the day of operation.

GROUP III.—*Cases of chronic gastric and duodenal ulcer, etc.:* The patients in this class number 205; among them were 2 fatal cases, and 214 operations. For the purpose of analysis I have adopted the following classification:

		CASES	DEATHS
A.	Gastric ulcer, duodenal ulcer singly or together.....	174	2
B.	Cholelithiasis with ulcer.....	4	0
C.	Cholelithiasis causing obstruction.....	6	0
D.	No demonstrable ulcer.....	11	0
E.	Pyloroplasty	3	0
F.	Secondary operations, the primary performed elsewhere	7	0
G.	Secondary operations in cases in classes *A* and *E*.....	9	0
		214	2

Class A.—There are 174 cases—74 males, 100 females.

Gastric ulcer alone.....	39 males	83 females
Duodenal ulcer alone.....	21 males	8 females
Gastric and duodenal ulcers.....	14 males	9 females

In this group a demonstrable ulcer was found in every instance. The number of duodenal ulcers was relatively very

small in the earlier cases but has gradually increased. Latterly I have operated more frequently for duodenal than for gastric ulcer, and think it not improbable that many cases in which the lesion was formerly supposed to be in the pylorus were incorrectly classified.

Class B.—Four patients in whom ulcer was associated with cholelithiasis; three ulcers were gastric and one duodenal, and in all posterior gastro-enterostomy was performed. In three cases cholecystotomy was performed at the same time. In one case an operation had been performed 12 months previously for cholecystitis and stone in the cystic duct. Subsequently cholecystectomy was performed and a calculus removed from the common duct.

All the patients recovered and are cured.

Class C.—In six cases, cholelithiasis, or its results, were found to be interfering with the proper action of the stomach. Five patients were females, one was a male. Of these six cases, two had had cholecystotomy performed before, and adhesions had caused pyloric narrowing. In one of these, a gastro-enterostomy had also been done with the aid of Murphy's button. The stomach symptoms returned after a year, and on reopening the abdomen it was found that the anastomosis was almost closed. A second gastro-enterostomy by suture was therefore performed.

In the remaining four cases, posterior gastro-enterostomy and cholecystotomy were performed three times, and cholecystectomy and gastro-enterostomy once. All the patients recovered and are cured. In all these cases the adhesions which existed between the stomach or duodenum and the bile-passage made it impossible to say whether ulceration in these viscera existed. In all probability, ulceration was present, or had been present, in every case.

Class D.—In 11 cases, 10 primary and 1 secondary, no demonstrable ulcer was found; all the patients were females. In two of these hæmatemesis has occurred; and in several the stomach is described as being "dilated." In one case death occurred two days after operation from uræmia, and ulcer-

ation without induration was found in the duodenum, probably uræmic in origin and of very recent occurrence.

In 3 cases the patients are now quite well. In 6 cases the patients are no better, and in one improvement is "doubtful."

Class E.—In 3 cases pyloroplasty was performed. In all gastro-enterostomy had subsequently to be performed 5 months, 4 years, and 7 years afterwards.

Class F.—There were 7 secondary operations, the primary being performed elsewhere. The following table gives the details:

First Operation	Abnormal Condition	Second Operation
Posterior gastro-enterostomy with Laplace's forceps	Opening closed, return of symptoms	Posterior gastro-enterostomy with Murphy button.
Posterior gastro-enterostomy..	Long loop; regurgitation.....	Entero-anastomosis.
Posterior gastro-enterostomy..	Hernia into lesser sac.....	Reduced. Lateral anastomosis.
Posterior gastro-enterostomy ..	Long-loop; regurgitation.....	Entero-anastomosis.
Posterior gastro-enterostomy..	Long-loop; regurgitation.....	Roux's operation.
Posterior gastro-enterostomy..	Return of symptoms, opening too small	Gastro-enteroplasty.
Pyloroplasty, three cases	Pyloric stenosis.....	Posterior gastro-enterostomy.

Class G.—There were 8 cases of secondary operations, the primary having been performed by me. The following table shows the details:

Previous Operation	Abnormal Condition Found	Secondary operation	Result
Gastro-enterostomy with Murphy button	Opening closed	Post. gastro-enterostomy	Cured.
Posterior gastro-enterostomy	A long loop	Roux's operation	Cured.
Posterior gastro-enterostomy	A long loop and a small opening	Roux's operation and gastro-enteroplasty	Improved.
Anterior gastro-enterostomy	Adhesions causing obstructions below the anastomosis	Lateral entero-anastomosis	Cured.
Posterior gastro-enterostomy	Nothing abnormal; no lesion of any kind	Exploratory.....	No benefit.
Posterior gastro-enterostomy	Adhesions constricting distal limb	Enteroplasty.....	Improved.
Gastrotysis	Many adhesions and ulcer in duodenum	Posterior gastro-enterostomy	Cured.

In addition two of my cases were subsequently operated upon by other surgeons. In one case a hernia into the lesser sac was found and reduced; in another some adhesions were found and were separated.

Postoperative vomiting occurred in 22 cases, 19 primary operations and 3 secondary.

Class A.—Postoperative hæmatemesis occurred in two cases; in one a pint of blood was vomited within 24 hours of operation; no ill result followed. In a second, hæmatemesis occurred after the patient's return home on several occasions; this was a secondary operation, and no lesion was visible when I explored.

Class B.—Regurgitant vomiting of bile necessitating early operation. One case. Profuse vomiting for 3 days; quite relieved by entero-anastomosis.

Class C.—Later regurgitation due to a loop and relieved by secondary operation. Two cases treated by entero-anastomosis.

Class D.—Cases in which vomiting occurred early and has now ceased. Seven cases, treated for a time by lavage with complete relief.

Class E.—Case in which vomiting still occurs. Eight cases; all were operated upon before 1905, and in all a long loop of the jejunum was left.

Class F.—Vomiting of food occurs now. Two cases. In both the symptom was frequent before operation and has not been relieved.

Ulcers were found on the lesser curvature in 8 cases; gastro-enterostomy was performed in 7 and excision in 1. In 3 cases carcinoma occurred later in the site of what was supposed to be a chronic ulcer, and in all proved fatal. In one only slight improvement has followed the operation; in the remaining cases the patients are now quite well.

LATE RESULTS.

In 14 cases no report was furnished in 1908, but in 11 of these the patients were seen by me over two years after opera-

tion, and I have notes to say that all were well; in 3 cases no report can be obtained.

In 12 cases the patients are reported to be "no better" or "about the same." In 6 of these cases, all women, no ulcer was found at the operation, nor any evidence of obstruction. One of the cases was a secondary operation by myself, the primary operation having been performed elsewhere. I found no lesion of the stomach and closed the abdomen without doing anything further. There has been no relief from the symptoms, pain and hæmatemesis. In another case the lesion was very slight, a small scar only being found on the posterior surface. One case is an example of Finney's operation. Three suffer from vomiting but are kept fairly comfortable and free from symptoms by lavage.

In 5 there has been complete relief from the symptoms for which the operation was done, but in all there is slight very occasional vomiting, chiefly of bile. The intervals of this vary from "2 to 3 weeks" to "every few months." In all the patients have returned to work, eat well, have gained weight, and attribute the onset of the vomiting to slight or grave indiscretions in the matter of diet. In 4 of the cases the patients are "well satisfied" with the result of the operation, though their surgeon does not share their feeling of content.

In 10 cases the improvement is doubtful or has been tardy. Three of these were secondary operations, the original operation being done elsewhere. One patient was well for 2 years, then began to lose weight and to become progressively more and more anæmic. He died 4 months later of "pernicious anæmia." In one case of duodenal ulcer with the most intense hyperchlorhydria, there was a recurrence of symptoms one year later, and at a second operation elsewhere some adhesions and a jejunal ulcer (?) were found. The patient recovered and improved subsequently. The remaining patients have still some of their former symptoms, and usually have to make occasional calls upon their medical men. The chief symptom that remains is vomiting. In all the ulcer

found was small and at some distance from the pylorus, in the body of the stomach or on the lesser curvature.

Eight patients have died since operation of diseases apart from those of the stomach: One 6½ years later of carcinoma of the pancreas; one 6 years later after operation by another surgeon for carcinoma of the cæcum; one 8 months later of acute pneumonia; one 4 years later of cardiac disease; one 3 months later of acute abscess of lung; one 1 year later of cardiac disease; and one 2 years later of pernicious anæmia. In one case the cause of death three years later is not mentioned.

In 7 cases death occurred from malignant disease of the stomach occurring at the site of the ulcer. The deaths occurred 2 years, 4 years, 2½ years, 3¼ years, 1 year, 1½ years, 2½ years subsequently. The deaths in these cases are very significant. The intervals in most of them between operation and death, suggests that the condition present at the time of the operation was not then malignant, but rather that a carcinomatous invasion of the diseased part occurred at a later period. They were, perhaps, examples of ulcus carcinomatosum. There can be no doubt that in some of these cases Rodman's operation,—excision of the ulcer-bearing area,—would have been the better procedure.

Two patients died as the direct result of the operation; one from uræmia, one from acute obstruction due to hernia of all the small intestine into the lesser sac, and strangulation at the margin of the opening through the transverse mesocolon.

The final results in this group may be briefly stated thus:

Living.—Cured, 18; relieved, 5; doubtful, 9; no better, 12; no recent report, 14 (11 of these may be considered certainly as cured).

Dead.—As result of operation, 2; of carcinoma of stomach, 7; of other causes, 8.

Total number of cases, 205.

GROUP IV.—*Cases of hour-glass stomach:* There were 22 cases, comprising 7 males and 15 females. In every case

there had been previous symptoms pointing to chronic gastric ulcer. In 4 cases the history is strongly suggestive of a former "subacute" perforation, while in a third case the urgency of a perforation indicated operative measures.

The total mortality is three—one on the fourth day, from septicæmia, resulting from a strangulated rectal prolapse; 1 in the third week, from suppression of urine; 1 on the fifth day, from pneumonia.

The ulcer in the stomach was associated with duodenal ulcer in 2 cases (1 male and 1 female).

In 1 case a pancreatic cyst was also found at operation. Adhesions to the anterior abdominal wall were met with in 4 cases. Trilobed stomach was seen once.

The following operations were performed: Gastro-enterostomy alone 7 times, 1 death. Gastrogastrostomy and gastro-enterostomy 3 times. Gastroplasty alone 7 times; in 2 secondary operations were necessary. Dilatation of stricture, once. Gastroplasty and gastro-enterostomy twice, one death. Gastrogastrostomy alone, once. Gastro-enterostomy and Loreta's operation once; the patient died.

Results.—Twenty-two cases, 3 deaths; 3 secondary operations (gastro-enterostomy) for return of symptoms; 1 secondary operation, entero-anastomosis for regurgitant vomiting after gastro-enterostomy.

One patient has since died of puerperal fever. Recent reports have been received from 17, all of whom are quite well; of one no report has been heard.

A summary of the entire number of cases gives the following results:

	Total Number	Recovered	Died	Since Dead	Cured
Group 1.	27	18	9	0	16
Group 2.	27	23	4	0	19
Group 3.	205	203	2	15	159
Group 4.	22	19	3	1	17
	281	263	18	16	211

The present condition of all the patients now alive is as follows: 211 patients are cured, 9 patients are improved, 12 patients are no better, 9 patients are doubtful, 6 patients not recently reported; total, 247.

Thirty-four patients are dead; 18 as a result of the operation, 7 of carcinoma of the stomach, 9 from other causes unconnected with the disease of the stomach, or the operation performed for its relief.

Such is a brief review of the after-history in all my cases. What are the lessons to be learnt therefrom? I submit the following points:

1. The operative treatment of stomach disorders should be confined exclusively to those cases in which an organic lesion is present. Unless there is a palpable and demonstrable ulcer in the stomach or in the duodenum or some condition which hampers the proper action of the stomach the symptoms are not due to any pathological cause capable of being relieved by surgical interference. However careful our preliminary investigations may be we shall from time to time display upon the operation table a perfectly normal stomach. We must not then endeavor to cover our diagnostic disaster by the performance of an unnecessary operation upon the stomach but rather must we candidly confess that our exploration has proved negative. To perform gastro-enterostomy in such cases has, I think, been proved to lead to unsatisfactory results, whereby the operation is discredited.

2. In cases of acute perforating ulcer, the perforation should be closed or the ulcer excised. When the ulcer lies upon the lesser curvature nothing more is necessary than this. The after-history of such cases shows that they are relieved from all disabilities referable to the stomach. When the ulcer is prepyloric, pyloric or duodenal, gastro-enterostomy also should be performed. It doubtless hastens the immediate recovery of the patient by affording an easier exit from the stomach than that impeded by the ulcer, and it forestalls the almost certain onset of symptoms which only a short-circuiting operation can relieve.

3. When a non-malignant lesion is discovered the treatment appropriate to it depends upon its position in the stomach. If an ulcer be placed on the lesser curvature at some distance from the pylorus, in such a position that no obstruction is offered to the onward passage of the food, excision should be performed. In such cases the relief from gastro-enterostomy may be incomplete and it is probable that the later onset of malignant disease occurs in a large proportion of cases. In some cases, however, when the ulcer is on the curvature or on the posterior surface of it adherent to the pancreas, relief follows if gastro-enterostomy is performed on the cardiac side of the lesion. It may be that the ulcer when anchored impedes the proper movements of the stomach, or that the nerve-supply being interfered with some local paresis of the gastric wall results.

4. If the ulcer be prepyloric, pyloric or duodenal, gastro-enterostomy should be performed. It is desirable also to infold an ulcer whenever possible, for both hemorrhage and perforation have occurred from ulcers for which gastro-enterostomy has been performed months or years before. The local treatment of the ulcer is always desirable and is generally easily performed.

5. The most satisfactory method of gastro-enterostomy is the posterior no-loop operation, with the almost vertical application of the bowel to the stomach. The vertical position is that into which the jejunum falls most easily in the normal (that is the erect) position of the body. A deviation to one or the other side if slight is of no importance, and entails no untoward consequences.

6. Regurgitant vomiting occurs as a result of the "loop" operation, whether anterior or posterior. It is relieved almost certainly by an entero-anastomosis. Patients who suffer from it may be relieved entirely of all symptoms for which they originally sought relief. An operation that is mechanically imperfect relieves the original disorder though it leaves serious disabilities behind it. The vomiting of bile may be relieved

by lavage and in some patients disappears entirely after the lapse of weeks or months or even years.

7. In cases of hour-glass stomach the surgical treatment necessary presents special difficulties on account of the frequency of two lesions—one in the body of the stomach and one at the pylorus, and double operations have consequently to be frequently performed.